

REMARKS

Applicant has amended Claims 13, 14, 16, and 19 as suggested by the Examiner. In Claim 15, Applicant has deleted the clause containing the term "preferably", and has added new dependent Claim 23, in which the recited angle is 20°. Applicant therefore submits that all rejections under Section 112 have been overcome.

The claims have been rejected under 35 U.S.C. §103, over various combinations of references. In particular, independent Claim 12 has been rejected over 1) Chen, Popov, and Livingston, and 2) Chen, Popov, and Weigle. Applicant submits that Claim 12 defines patentable subject matter over both of these combinations, for the reasons given below.

Claim 12 contains the following major features:

- A) a device for measuring muscle strength;
- B) a lower support base adapted to support a standing patient in plantar support on the lower support base;
- C) an upper support bracket movable vertically above the lower support base and conformed to bear vertically on the head of the patient;
- D) means for selectively immobilizing the upper bearing bracket in vertical position;
- E) means for measuring the vertical position of the upper support bracket;
- F) means for measuring the vertical lifting force that the head of the patient applies to the upper support bracket; and
- G) plantar support sensors in the lower support base, the plantar

support sensors comprising means for testing for maintained normal plantar support of the foot or feet of the patient by producing a signal if the foot or feet are no longer in normal plantar support.

The Examiner admits that Chen does not show features (A) and (F). However, Applicant submits that Chen also does not show feature (G).

The lower support base of Chen comprises a weight sensor (described in the patent as a "load cell"), in order to measure only the weight of the patient. The present application does not disclose any means for measuring the weight of the patient.

The plantar support sensor of the present invention comprises means for testing for maintained normal plantar support of the foot or feet of the patient, producing a signal if the feet are no longer in normal plantar support.

The sensor of Chen is only one sensor, and does not test for normal plantar support of the foot. The sensor of Chen does not respond to the position of the foot, and does not produce a signal if the foot is no longer in normal plantar support. Thus, for example, the single sensor of Chen cannot detect the condition wherein the patient is standing only on the fore part of the foot.

To emphasize the above distinction, Applicant has amended Claim 12 to recite feature (G) using "means plus function" language. As now claimed, the plantar support sensors comprise means for testing for maintained normal plantar support of the foot or feet of the patient by producing a signal if the foot or feet are no longer in normal plantar support. Chen clearly does not have this feature.

The Examiner has cited Popov for its showing of a self-stretching method. However, Applicant submits that Popov does not supply what is missing in Chen.

First, Popov does not disclose a device for measuring muscle strength. Popov shows a device which simply measures a length, and which signals a successful attempt to reach that length. No force sensor is disclosed. Popov discloses buttons 3, 4 that the patient tries to reach and press. Popov measures only the length reached by the patient, and does not measure a force exerted by the head of the patient on a support plate or bracket.

Furthermore, the only "support base" described in Popov is used in the embodiment in which the patient lies horizontally (Figure 3). In the embodiment intended for use with a patient who is standing or sitting (Figure 1), there is no lower support base on which the patient stands.

The "support base" 8a of Figure 3 of Popov would be of no use in a standing or sitting system.

Clearly, Popov does not disclose plantar support sensors in the lower support base comprising means for testing for maintained normal plantar support. Indeed, lower support base 8a is only adapted to allow the patient to push with his feet, and does not respond to a change in the positioning of the feet. In Figure 3 of Popov, the patient is pushing with his toes; this position comprises an abnormal plantar support of the feet, as defined in the present invention.

Thus, the addition of Popov to Chen does not yield the present claimed invention.

The Examiner apparently admits that Livingston fails to disclose features A-E and G, and cites this reference only for its showing of means for measuring a vertical force.

However, Applicant submits that the Examiner has interpreted Livingston incorrectly. Livingston describes only means for measuring forces applied by a user with his hands, arms, knees, legs, buttocks, and back (see column 6, lines 56-59). Livingston fails to describe means for measuring a vertical lifting force applied by the head of a patient to an upper support bracket.

In any event, it is clear that since Livingston does not teach feature (G), the addition of Livingston to Chen and Popov does not yield what is recited in Claim 12.

In summary, the combination of Chen, Popov, and Livingston does not contain what is recited in Claim 12. Claim 12 is therefore believed allowable over this combination of references.

With regard to the patent to Weigle, the Examiner apparently cites this reference only for its purported showing of a means for measuring a vertical force (feature (F)).

However, Weigle only discloses a device for measuring forces exerted by a patient while sitting or lying on the back. There is no embodiment in Weigle in which the patient is standing on a lower support base.

The only embodiment in which Weigle measures a force vertically applied is shown in Figure 16. But in this embodiment, the patient is lying on his back.

Also, in Weigle, the measured force is exerted on the front of the patient's head, not on the top of the head.

Weigle is therefore not designed to test the muscular capacity of the short, deep back muscles by causing them to work in a self-stretching mode.

Because Weigle fails to disclose or suggest feature (G), the addition of Weigle to Chen and Popov does not yield the invention recited in Claim

12.

To emphasize the further distinction of the present invention over Weigle, Applicant has added new dependent Claim 24, and new independent Claim 25, both of which recite that the means for measuring the vertical lifting force is positioned to measure force exerted by the top portion of the head of the patient. These claims are believed allowable over the references, for the reasons given above.

In the above discussion, it has been assumed that it would be obvious to make the combinations proposed by the Examiner. In fact, such combinations would not be obvious, for the following reasons.

The problem addressed by the present invention is to avoid or at least detect any false stretching, so as to measure the real stretching reliably and reproducibly, because the short, deep back muscles stretch the vertebral column, and measuring the stretch depends greatly on the position of the feet of the patient on a lower support base.

In fact, a standing patient may effect a false stretching by modifying his normal plantar position, for example, by standing on tip-toe (plantar flexion), by raising the front portion of the foot (dorsal flexion), by flexing the toes downwards, by rolling the foot outwards (supination).

This problem is not discussed in Popov and Livingston, and neither reference provides a solution for the above problem.

Thus, the person of ordinary skill, while trying to solve the problem addressed by the present invention, would not consider Popov and Livingston, for the purpose of modifying Chen.

Therefore, Claim 12 is believed patentable, both because it would not be obvious to combine the references as proposed by the Examiner, and also

because the references, even if combined, would not yield what is claimed.

The same considerations apply to the rejections involving Weigle.

Therefore, Applicant submits that Claims 12 and 25 are allowable. The remaining claims all depend, directly or indirectly, from Claim 12, and are therefore also believed allowable.

Applicant submits that the application, as amended, is in condition for allowance. Applicant requests reconsideration by the Examiner, and early favorable action.